IN THE CLAIMS:

1. (Cancelled) A method of detecting a preselected gas in an environment, comprising:

(1) continuously moving a stream of sample gas from the environment through a confined testing area within a detecting instrument;

(2) energizing a light source to emit a light beam of a preselected frequency that is highly absorbed by the preselected gas, the light source having a heat control assembly associated therewith;

(3) passing said light beam through said stream of gas within said confined testing area;

(4) measuring absorption of said light beam to provide an indication of the concentration of said preselected gas in said gas sample; and

(5) passing said stream of test gas past said heat control assembly to augment temperature control of said light source.

2. (Currently Amended) A method according to claim ~~1~~ 26 wherein said preselected gas is selected from the group comprising methane, butane, propane, ethane, oxygen, hydrogen, nitrogen, H_2O, hydrogen fluoride, hydrogen chloride, hydrogen boride, hydrogen sulfide, ammonia, CO, CO_2, NO, NO_2 and SF_6.

3. (Currently Amended) A method according to claim ~~1~~ 26 wherein said light source is a laser diode.

4. (Currently Amended) A method according to claim ~~1~~ 26 wherein said light source is a light emitting diode.

5. (Currently Amended) A method according to claim ~~1 wherein said~~ 26 including a heat control assembly that includes a heat sink in thermal communication with said light source, said heat sink including a heat dissipater past which said stream of sample gas ~~stream~~ flows.

6. (Currently Amended) A method according to claim ~~1~~ 26 wherein said detecting instrument is in the form of a Herriot-type multipass cell.

7. (Cancelled) A method according to claim 1 wherein said light beam emitted from said light source is split, a portion thereof of said light beam passing directly to a photo detector providing a reference signal that is employed in measuring the absorption of said light beam by said stream of sample gas within said confined testing area.

8. (Cancelled) A method according to claim 1 wherein said light beam after having passed through said gas stream impinges on a photo detector providing an electrical signal for use in measuring absorption of said light beam.

9. (Currently Amended) A cell for use in measuring the concentration of a preselected gas in a gas sample, comprising:

an axle having a forward and a rearward end;

a housing surrounding and spaced from an external surface of said axle providing an annular absorption area;

a pump for moving the gas sample through said absorption area;

a first annular mirror supported at said axle ~~first~~ forward end and having an entry aperture therein;

a second annular mirror supported at said axle second end and having an exit aperture therein;

a light source supported forwardly of said first mirror that, when energized, generates a light beam passing through said ~~inlet~~ entry aperture and into said annular absorption area to be reflected repeatedly between said mirrors, the light beam after multiple reflections passing out through said exit aperture;

a first photo detector for indicating the intensity of said light beam entering said ~~inlet opening~~ entry aperture;

a second photo detector rearwardly of said second mirror in alignment with said exit aperture to receive the impingement of said light beam; ~~and~~

a third photo detector positioned outwardly of said second annular mirror to receive a portion of said light beam that passes through said second annular mirror after said light beam has traveled a reduced length path through said annular absorption area whereby a concentration measurement corresponding to a higher concentration level can be measured; and

instrumentation connected to said first, ~~and~~ second and third photo detectors by which the absorption of said beam is measured and by which the concentration of the preselected gas in the gas sample can be determined.

10. (Original) A cell for use in measuring the concentration of a preselected gas in a gas sample according to claim 9 including:

a window between said light source and said entry aperture that is positioned at an angle of incidence to said light beam, a portion of said light beam being reflected by the window to strike said first photo detector.

11. (Cancelled) A cell for use in measuring the concentration of a preselected gas in a gas sample according to claim 9 including a third photo detector positioned outwardly of said second annular mirror to receive a portion of said light beam that passes through said second annular mirror after said light beam has traveled a reduced length path through said annular absorption area whereby a concentration measurement corresponding to a higher concentration level can be measured.

12. (Original) A cell for use in measuring the concentration of a preselected gas in a gas sample according to claim 9 including passageways in said axle communicating said forward and rearward ends with said absorption area surrounding said axle by which sample gas flows into, through and then out of said absorption area.

13. (Original) A cell for use in measuring the concentration of a preselected gas in a gas sample according to claim 9 wherein said housing is formed of a first and a second half shell that is positioned around said axle and that is configured to define said annular absorption area.

14. (Original) A cell for use in measuring the concentration of a preselected gas in a gas sample according to claim 9 including a thermoelectric cooler thermally coupled to said light source and control circuitry whereby the temperature of said light source is controlled.

15. (Original) A cell for use in measuring the concentration of a preselected gas in a gas sample according to claim 14 including a substrate on which said light source is mounted and including a thermistor mounted on said substrate providing a measurement of the temperature of said substrate and thereby said light source, the thermistor coupled to said control circuitry.

16. (Original) A cell for use in measuring the concentration of a preselected gas in a gas sample according to claim 9 wherein said light source is a laser-emitting diode.

17. (Original) A cell for use in measuring the concentration of a preselected gas in a gas sample according to claim 9 wherein said light source is a light-emitting diode.

18. (Original) A cell for use in measuring the concentration of a preselected gas in a gas sample according to claim 14 wherein said light source and said thermoelectric cooler are mounted in a chamber supported to said cell and including a heat exchanger and wherein said chamber is thermally isolated from said heat exchanger.

19. (Original) A cell for use in measuring the concentration of a preselected gas in a gas sample according to claim 9 including a pump connected to draw sample gas into and through said annular absorption area by means of piping and including a filter system in series with said annular absorption area and pump, wherein said pump, piping and filter systems are specified and sized so that the pressure of sample gas within said absorption area is between about .1 to 2.0 atmospheres.

20. (Currently Amended) A cell for use in measuring the concentration of a preselected gas in a gas sample according to claim 9 including a heat exchange system thermally coupled to said light source, a pump for moving sample gas through said absorption area and including piping for moving the sample gas past the heat exchanger system.

21. (Original) A cell for use in measuring the concentration of a preselected gas in a gas sample according to claim 9 including:

a global positioning system providing a signal identifying the geographical location of the cell; and

a display connected to instrumentation and to said global positioning system providing a display of detected gas concentrations at different geographical locations.

22. (Currently Amended) A cell for use in measuring the concentration of a preselected gas in a gas sample according to claim 9 wherein said light source is contained in a light mounting structure that is supported to the cell forwardly of said first mirror and wherein said light mounting structure is pivotal about two divergent axii that are in perpendicular

planes permitting accurate alignment of said light beam with said ~~inlet~~ entry aperture and said annular mirrors.

23. (Original) A cell for use in measuring the concentration of a preselected gas in a gas sample according to claim 22 wherein first and second planar sheets form hinges in diametric planes providing said two divergent axii of pivotation.

24. (Original) A cell for use in measuring the concentration of a preselected gas in a gas sample according to claim 16 wherein said laser-emitting diode is energized by a pulsed current having a generally saw tooth pattern whereby the frequency of light emitted by each voltage pulse covers a selected band.

25. (Original) A cell for use in measuring the concentration of a preselected gas in a gas sample according to claim 9 wherein the cell is transported in a vehicle and wherein the gas sample is continuously replaced while the vehicle is in motion by withdrawing sample gas from exterior of the vehicle.

26. (New) A method of measuring the concentration level of a preselected gas in an environment, comprising:

(1) continuously moving a stream of sample gas from the environment through a confined testing area within a detecting instrument;

(2) energizing a light source to emit a light beam of a frequency that is highly absorbed by the preselected gas;

(3) splitting said light beam into three components;

(4) passing a first component of said light beam to a first photo detector for providing a first electrical signal indicative of the intensity of said light beam;

(5) passing a second component of said light beam multiple times through said confined testing area and thence to a second photo detector for providing a second electrical signal indicative of a concentration measurement corresponding to a lower concentration level;

(6) passing a third component of said light beam over a reduced length path through said confined testing area and thence to a third photo detector for providing a third electrical signal indicative of a concentration measurement corresponding to a higher concentration level; and

(7) employing said first, second, and third electrical signals for determining the concentration level of said preselected gas in said stream of sample gas.